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09/909,337	07/19/2001	Osamu Chikagawa	P/1071-1387	9608

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EXAMINER

ALCALA, JOSE H

ART UNIT

PAPER NUMBER

2827

DATE MAILED: 12/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/909,337

Applicant(s)

CHIKAGAWA ET AL.

Examiner

Jose H Alcala

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3,5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

Art Unit: 2827

## DETAILED ACTION

### *Priority*

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 7/21/00. It is noted, however, that applicant has not filed a certified copy of the Japan 2000-220869 application as required by 35 U.S.C. 119(b).

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeh et al. (US Patent NO. 5,632,942).

Regarding Claim 1, Yeh teaches an insulative ceramic compact comprising a fired mixture of (A) a ceramic powder (column 5, lines 20-25) selected from the group consisting of Mg Al<sub>2</sub> O<sub>4</sub>, Mg<sub>3</sub> B<sub>2</sub> O<sub>6</sub> and Mg<sub>2</sub> B<sub>2</sub> O<sub>5</sub>, and (B) a glass powder comprising from about 30 to 70% by weight of silicon oxide (column 5, lines 29-30) calculated as SiO<sub>2</sub>, from about 0 to 35% by weight of boron oxide (column 5, line 30) calculated as B<sub>2</sub> O<sub>3</sub>, from 5 to about 35% by weight of aluminum oxide (column 5, lines 30-31) calculated as Al<sub>2</sub> O<sub>3</sub> and from about 1 to 25% by weight of magnesium oxide calculated as Mg O. Yeah fails to explicitly teach the ranges of concentration of a glass powder comprising from about 13 to 50% by weight of silicon oxide calculated as SiO<sub>2</sub>, from about 8 to 60%

Art Unit: 2827

by weight of boron oxide calculated as  $B_2O_3$ , from 0 to about 20% by weight of aluminum oxide calculated as  $Al_2O_3$  and from about 10 to 55% by weight of magnesium oxide calculated as  $MgO$ . It would have been obvious to one of ordinary skill in the art at the time the invention was made to change the composition of the ceramic compact in order to control its physical properties, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Regarding Claim 2, Yeh fails to explicitly teach that said glass comprises about 20 to 30% by weight of silicon oxide calculated as  $SiO_2$ , from about 30 to 60% by weight of boron oxide calculated as  $B_2O_3$ , from 0 to about 20% by weight of aluminum oxide calculated as  $Al_2O_3$ , and from about 10 to 55% by weight of magnesium oxide calculated as  $MgO$ . It would have been obvious to one of ordinary skill in the art at the time the invention was made to change the composition of the ceramic compact in order to control its physical properties, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Regarding Claim 3, Yeh fails to explicitly teach that said glass powder further comprises up to about 20% by weight or less relative to the total weight of the glass powder of at least one alkaline earth metal oxide selected from the group consisting of  $CaO$ ,  $BaO$  and  $SrO$ , and up to about 10% by weight or less relative to the total weight of

Art Unit: 2827

the glass powder of at least one alkali metal oxide selected from the group consisting of  $\text{Li}_2\text{O}$ ,  $\text{K}_2\text{O}$  and  $\text{Na}_2\text{O}$ ; and wherein said compact further comprises up to about 15% by weight relative to the total weight of said ceramic compact of zinc oxide calculated as  $\text{ZnO}$  and up to about 3% by weight or less relative to the total weight of said ceramic compact of copper oxide in a proportion calculated as  $\text{CuO}$ . It would have been obvious to one of ordinary skill in the art at the time the invention was made to change the composition of the ceramic compact in order to control its physical properties, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Regarding Claims 4 and 10, Yeh fails to explicitly teach, wherein the weight ratio of said ceramic powder to said glass powder contained in said insulative ceramic compact is in a range from about 20:80 to 80:20. It would have been obvious to one of ordinary skill in the art at the time the invention was made to change the composition of the ceramic compact in order to control its physical properties, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Regarding Claim 5, Yeh fails to explicitly teach, wherein the weight ratio of said ceramic powder to said glass powder contained in said insulative ceramic compact is in a range from about 30:70 to 50:50. It would have been obvious to one of ordinary skill in the art at the time the invention was made to change the composition of the ceramic

compact in order to control its physical properties, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Regarding Claim 6, Yeh teaches in column 5, lines 26-34, that said glass powder can further comprise other materials including at least one alkaline earth metal oxide in a proportion of about 20% by weight or less relative to the total weight of the glass powder but fails to select it from the group consisting of CaO, BaO and SrO. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Yeh in order to select it from the group consisting of CaO, BaO and SrO, in order to have the desired properties such as firmness or flexibility, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

Regarding Claim 7, Yeh teaches that said glass powder further comprises at least one alkali metal oxide in a proportion of about 10% by weight or less relative to the total weight of the glass powder, but fails to select it from the group consisting selected from the group consisting of LiO, KO and Na<sub>2</sub>O. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Yeh in order to select it from the group consisting of LiO, KO and Na<sub>2</sub>O, in order to have the desired properties such as firmness or flexibility, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of

Art Unit: 2827

its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

Regarding Claim 8, Yeh fails to explicitly teach further comprising zinc oxide in a proportion calculated as ZnO of about 15% by weight or less relative to the total weight of said ceramic compact. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a zinc oxide in the invention for its specific conductivity and other properties, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416. It would have been further obvious to one having ordinary skill in the art at the time of the invention was made to choose the desired amount of material, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding Claim 9, Yeh fails to explicitly teach further comprising zinc oxide in a proportion calculated as CuO of about 3% by weight or less relative to the total weight of said ceramic compact. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a copper oxide in the invention for its specific conductivity and other properties, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416. It would have been further obvious to one having ordinary skill in the art at the time of the invention was made to choose the desired amount of material, since it has been held

Art Unit: 2827

that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding Claims 11-13, Yeh suggests to have different materials for the ceramic powder, but fails to explicitly teach that it comprises  $MgAl_2O_4$ ,  $Mg_3B_2O_6$  or  $Mg_2B_2O_5$ . It would have been obvious to one having ordinary skill in the art at the time the invention was made to change the materials for the ceramic powder, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

Regarding Claim 14, Yeh fails to teach a plurality of electrodes within said insulative ceramic layer. Yamamoto teaches a plurality of electrodes (reference number 44) within an insulative ceramic layer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Yeh and Yamamoto et al. in order to have a plurality of electrodes within an insulative layer, thus being able to transmit electrical current.

Regarding Claim 15, Yeh fails to teach a second ceramic layer laminated on at least one side of said insulative ceramic layer, wherein said second ceramic layer has a dielectric constant higher than the dielectric constant of said insulative ceramic layer. Yamamoto teaches a second ceramic layer (the section of substrate 10, that is under reference number 44), but fails to teach that the second layer has a dielectric constant higher than the dielectric constant of the insulative ceramic layer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify



the combination of the teachings of Yeh and Yamamoto, in order to make the second layer have a higher dielectric constant, thus reducing the unwanted transfer of electric current except on the desired area.

Regarding Claim 16, Yeh fails to teach a pair of said plurality of electrodes that are arrayed in parallel with each other with the interposition of at least part of said insulative ceramic layer to thereby constitute a capacitor. Yamamoto teaches a pair of said plurality of electrodes (reference numbers 44 and 12) that are arrayed in parallel with each other with the interposition of at least part of said insulative ceramic layer to thereby constitute a capacitor. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of the teachings of Yeh and Yamamoto, in order to have a pair of said plurality of electrodes arrayed in parallel with each other with the interposition of at least part of said insulative ceramic layer, thus constituting a capacitance property in the board, while having excellent electromagnetic shielding properties.

Regarding Claim 17, Yeh fails to explicitly teach a number of said plurality of electrodes are interconnected so as to form a conductive coil. Yamamoto teaches a number of said plurality of electrodes (Reference number 12,44,30, etc.) that are interconnected so as to form a conductive coil. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of the teachings of Yeh and Yamamoto, in order to have a plurality of electrodes that are interconnected so as to form a conductive coil, thus helping in the transfer of electricity and helping with electromagnetic shielding.

Regarding Claim 18, Yeh fails to explicitly teach at least one electronic part device, wherein said electronic part device is mounted on said multilayer ceramic substrate and constitutes a circuit with a number of said plurality of electrodes. Yamamoto teaches at least one electronic part device (reference number 14), wherein said electronic part device is mounted on said multilayer ceramic substrate and constitutes a circuit with a number of said plurality of electrodes (See Figure 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of the teachings of Yeh and Yamamoto, in order to have an electronic part device located on the top, and provide electrical connection to the device, while improving electromagnetic shielding.

Regarding claims 19 and 20, Yeh fails to teach a cap being fixed to said multilayer ceramic substrate so as to surround said electronic part device, and fails to teach the cap is conductive. Yamamoto teaches a conductive cap (reference number 20) being fixed to a multilayer ceramic substrate so as to surround said electronic part device. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of the teachings of Yeh and Yamamoto, in order to have a conductive cap covering the electronic part device, thus improving electromagnetic shielding.

**Conclusion**

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references teach some of the elements of the instant claimed invention: Terui (US Patent No. 6,225,694), Pomerleau et al. (US Patent No. 5,944,124), Joshi (US Patent No. 4,069,498) and Oboodi et al. (US Patent No. 4,794,048).

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jose H Alcala whose telephone number is (703) 305-9844. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Talbott can be reached on (703) 305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JHA  
December 16, 2002

*John B. Vigushan*  
JOHN B. VIGUSHAN  
Examiner GAU 2827